Introduction to AWS

11-695 Recitation 1

Agenda

EC2 Storage Architecture

Launch Instances

Connect to Instances

Useful Tools

What is AWS?

Amazon Web Services, includes

Compute (EC2), Storage (S3), Database (Aurora, DynamoDB), …

Amazon Elastic Compute Cloud (EC2) provides virtual machines

… some with GPUs (main reason to use EC2)

Agenda

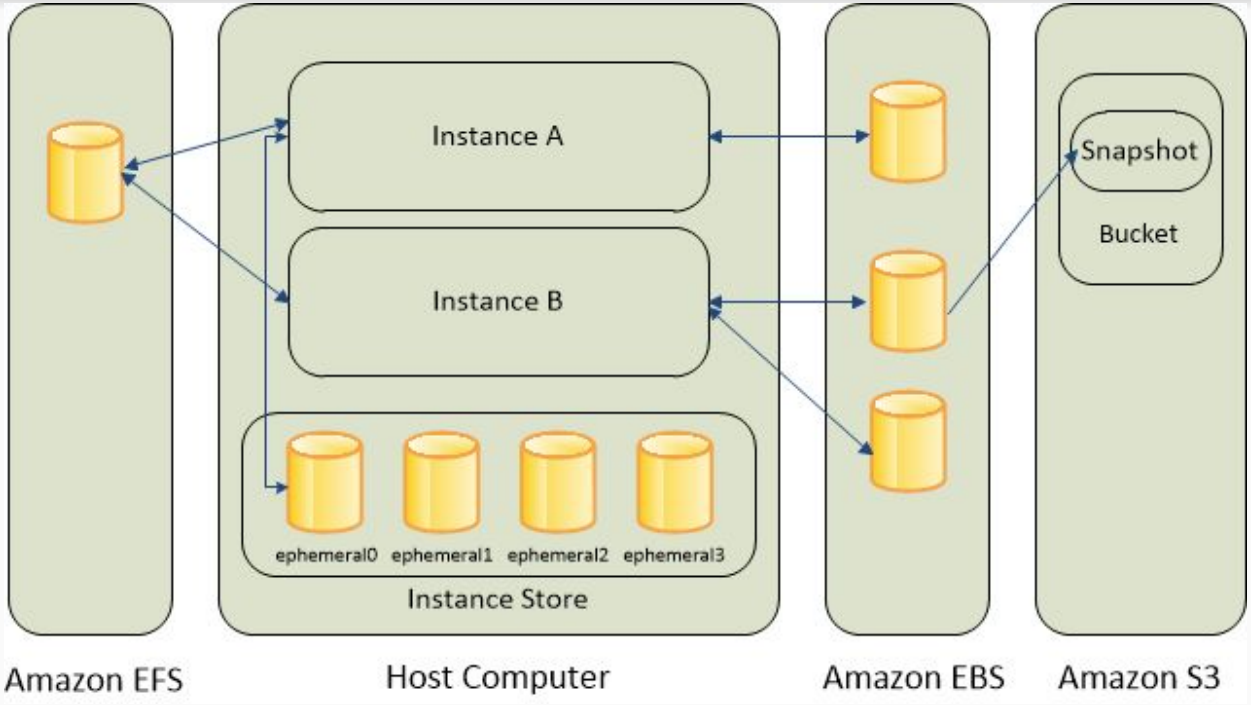
EC2 Storage Architecture

Launch Instances

Connect to Instances

Useful Tools

EC2 Storage Architecture



https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/Storage.html

EC2 Storage Architecture

Amazon EC2 Instance Store: Instance stores are storage volumes that are present on the host computer that the instances are running on. Instance stores are temporary (ephemeral), block level storage. Instance store data is cleared when an instance is stopped or terminated.

Amazon Elastic Block Store (EBS): EBS presents volumes to the user that can be created independently of an instance and attached to instances as needed. EBS volumes are persistent and flexible. Multiple EBS volumes can be attached to an instance, and an EBS volume can be detached from an instance and attached to another. EBS incurs additional charges (GB/month) in addition to the EC2 instance charges. EBS volumes can also be backed up by creating a snapshot, which is stored in Amazon S3.

Amazon Simple Storage Service (S3): Amazon S3 is an object storage service which has a web services interface to store and retrieve data. Instances can access data directly on S3 using the web services interface. Amazon S3 is also used to store snapshots of EBS volumes.

Agenda

EC2 Storage Architecture

Launch Instances

Connect to Instances

Useful Tools

Before Launching Instances …

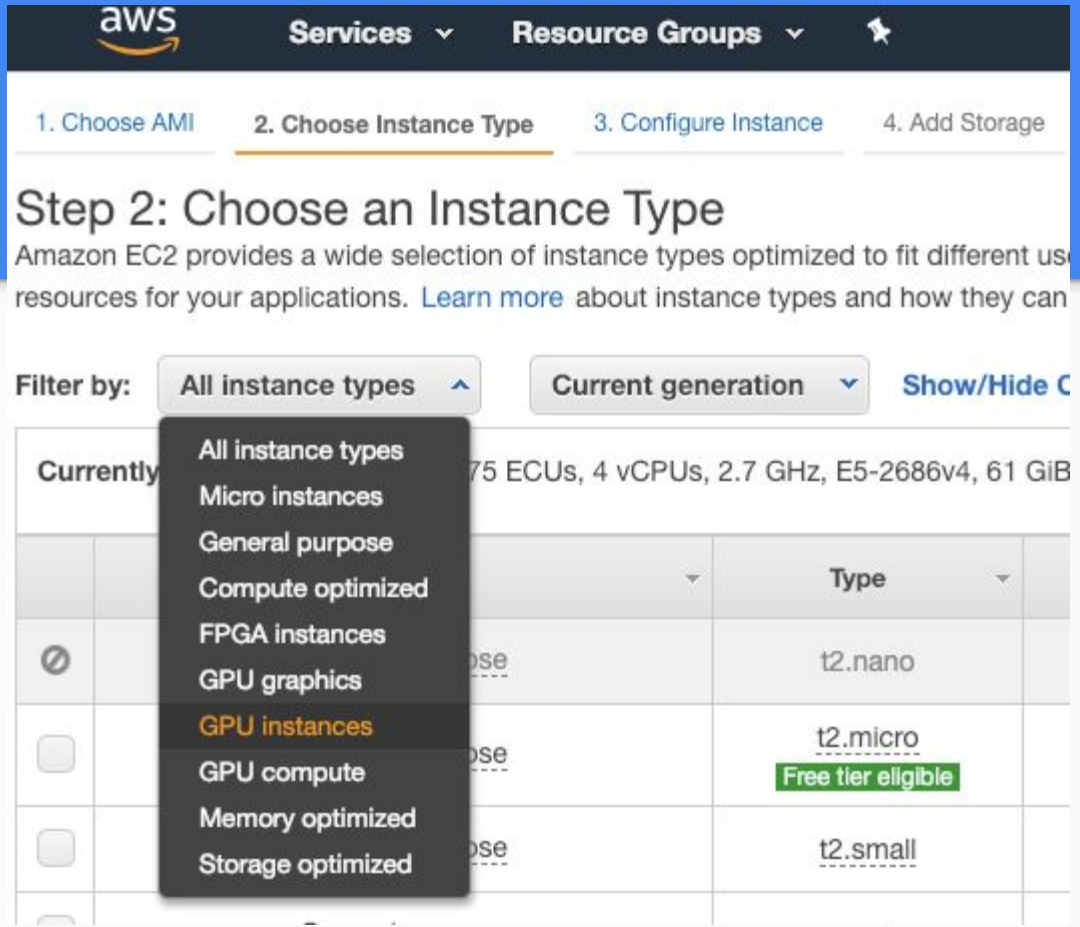
1. Sign up an AWS account, login to AWS Management console
2. Go to Services -> Billing, setup Billing Info, Redeem Credits
3. Go to Services -> EC2, where you can launch instances, check pricing history, manage kay pairs, security groups …

Launch Instances

1. In EC2 console, select Launch Instance
2. Choose an Amazon Machine Image (AMI)
   (Recommend) Deep Learning AMI (Ubuntu)
3. Choose Instance Type: p2.xlarge ($0.9/hr), p3.2xlarge ($3.0/hr)
   On-Demand (won't be preempted) vs Spot (⅓ price, may be preempted)
4. Choose Storage (uncheck "Delete on Termination" for spot instances)
5. Tags and security groups
6. Launch -> Generate/Select key pair for ssh

Tips

Filter GPU types:



Tips

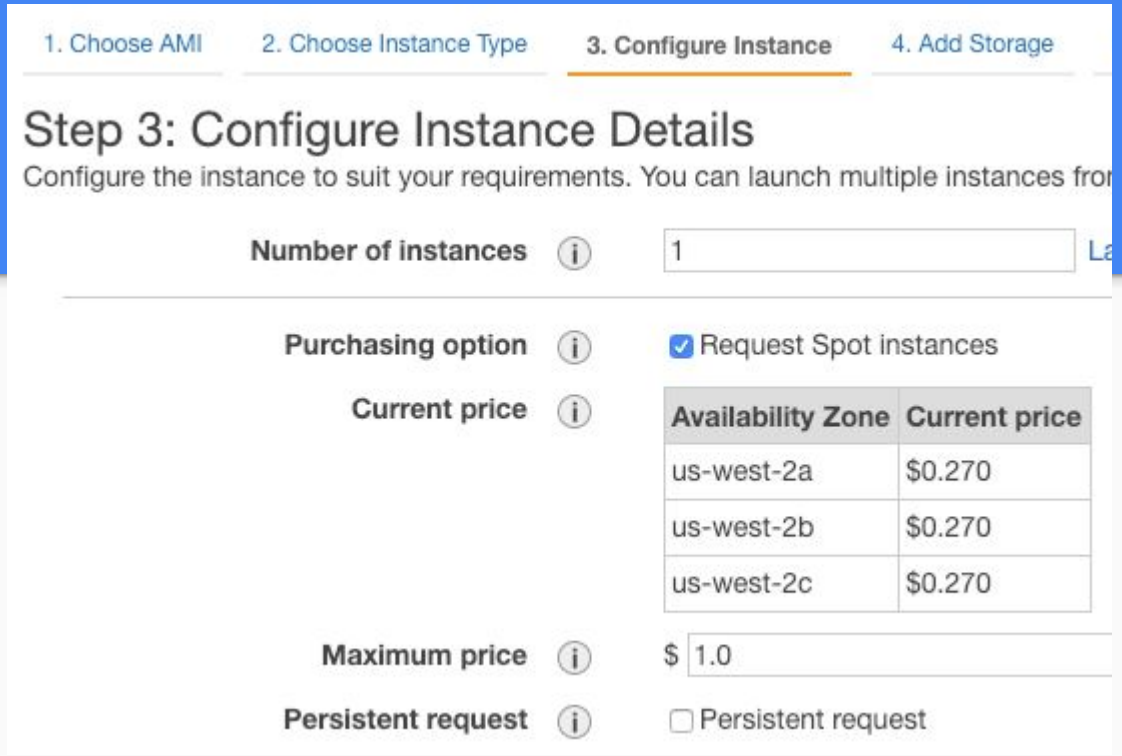
Configure Spot request:

Maximum price:

On-Demand or higher

Other fields:

Default config

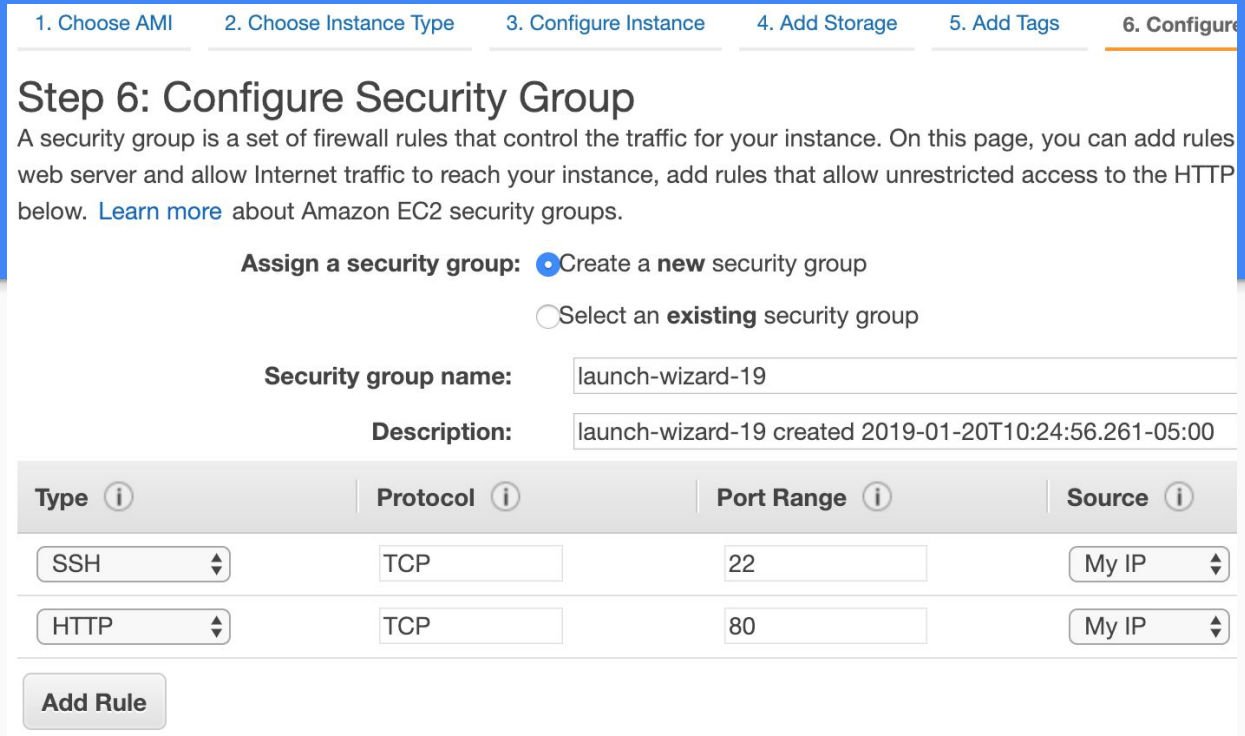


Tips

SSH

HTTP

e.g. Jupyter Notebook



Agenda

EC2 Storage Architecture

Launch Instances

Connect to Instances

Useful Tools

Connect to Instances

On local machine:

ssh -i key_file.pem ubuntu@ec2-50-19-54-72-compute-1.amazonaws.com

… Remember to change your local secret key file permission to 400.

chmod 400 key_file_name.pem

Attach existing EBS and mount

https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-attaching-volume.html

https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-using-volumes.html

Agenda

EC2 Storage Architecture

Launch Instances

Connect to Instances

Useful Tools

Useful Tools

Tmux - Maintain active terminals on remote machines

Jupyter Notebook - Coding python inn local browser and running on remote machines

FileZilla - Transfer files between local and remote machines

Thanks!

Questions are welcomed on Piazza!